

**WHAT IS CLAIMED IS:**

1    1. A machine-implemented method comprising:  
2                 producing a first authentication message comprising:  
3                         authentication data encrypted with a first key; and  
4                         a data structure comprising the first key, wherein  
5         the data structure is encrypted with a second key;  
6                 generating a request message to have a first network  
7         device associated with a first network deliver datagrams  
8         destined for a home address associated with a mobile device on  
9         the first network to a second address on a second, different  
10      network; and  
11                 embedding the authentication message in the request  
12      message.

1    2. The method of claim 1 wherein the authentication data  
2      comprises a timestamp.

1    3. The method of claim 1 wherein the second key is known to  
2      the first network device and unknown to the mobile node.

1    4. The method of claim 1 wherein the authentication message  
2      comprises a Kerberos Application Request.

1    5. The method of claim 1 wherein the data structure  
2      comprises a Kerberos ticket.

1       6. The method of claim 1 further comprising generating a  
2 second authentication message.

1       7. The method of claim 6, wherein generating a second  
2 authentication message comprises:

3           generating a hash of the request message using the first  
4 key.

1       8. The method of claim 6 further comprising:

2           transmitting the request message and second  
3 authentication message to the first network device.

1       9. The method of claim 8 further comprising:

2           receiving the request message and second authentication  
3 message by a device on the home network; and  
4           decrypting the data structure using the second key to  
5 obtain the first key.

1       10. The method of claim 9 further comprising:

2           verifying the second authentication message using the  
3 first key.

1       11. The method of claim 9 further comprising generating a  
2 third key.

1       12.       The method of claim 9 further comprising generating  
2       key material, wherein the key material may be supplied to a  
3       function to generate a third key.

1       13.      The method of claim 1 wherein the request message  
2       comprises a Registration Request message.

1       14.      The method of claim 11 further comprising:  
2               forming a reply authentication message comprising the  
3       third key encrypted with the first key.

1       15.      The method of claim 14 wherein the reply authentication  
2       message comprises a Kerberos Application Reply message.

1       16.      The method of claim 14 further comprising:  
2               forming a reply message that includes the reply  
3       authentication message.

1       17.      The method of claim 16 wherein the reply message  
2       comprises a Registration Reply message.

1       18.      The method of claim 16 further comprising:  
2               generating a third authentication message; and  
3               transmitting the reply message and third authentication  
4       message to the mobile node.

1       19. The method of claim 18 wherein generating a third  
2 authentication message comprises:

3             generating a hash of the reply authentication message  
4 using the first key.

1       20. A machine-implemented method comprising:

2             receiving at a first device associated with a home  
3 network an authentication message and a request message to  
4 reroute datagrams destined for a first address of a mobile  
5 device associated with the home network to a second address  
6 not associated with the home network, wherein the request  
7 message comprises:

8             a data structure that includes a first key encrypted  
9 with a second key; and

10             determining if the authentication message is valid.

1       21. The method of claim 20 further comprising:

2             generating a third key if the authentication message is  
3 determined to be valid.

1       22. The method of claim 20 further comprising:

2             generating key material if the authentication message is  
3 determined to be valid, wherein the key material may be

4 supplied to a function known to the first device and the  
5 mobile device to produce a third key.

1 23. The method of claim 20 wherein the authentication message  
2 comprises a hash of the request message, wherein the hash is  
3 computed using the first key.

1 24. The method of claim 20 wherein the request message  
2 comprises a Registration Request message.

1 25. The method of claim 23, wherein determining if the  
2 authentication message is valid comprises:  
3 computing a hash of the request message using the first  
4 key; and  
5 comparing the computed hash to the authentication  
6 message.

1 26. The method of claim 25 further comprising:  
2 decrypting the data structure using the second key to  
3 obtain the first key.

1 27. The method of claim 21 further comprising:  
2 receiving a reply message from the first device by the  
3 mobile device, wherein the reply message includes the third  
4 key.

1       28. The method of claim 27 further comprising:

2              forming a second request message to have datagrams  
3              destined for a first address of a mobile device associated  
4              with the home network to a third address not associated with  
5              the home network;

6              forming a second authentication message using the third  
7              key; and

8              transmitting the second request message and second  
9              authentication message to the first device.

1       29. A computer program product residing on a computer  
2       readable medium having instructions stored thereon that, when  
3       executed by the processor, cause that processor to:

4              form an authentication message comprising:  
5                  authentication data encrypted with a first key; and  
6                  the first key encrypted with a second key;

7              generate a request message requesting that datagrams  
8       destined for a first Internet Protocol address of a mobile  
9       device be routed to a second Internet Protocol address; and  
10          include the authentication request message in the request  
11       message.

1       30. The computer program product of claim 29 wherein the  
2       authentication message comprises a Kerberos Application  
3       Request message.

1       31. The computer program product of claim 29 further  
2       comprising instructions to generate a hash of the request  
3       message using the first key to form a second authentication  
4       message.

1       32. The computer program product of claim 29 further  
2       comprising instructions to:  
3              receive a reply message from the first device by the  
4       mobile device, wherein the reply message includes a third key;  
5              form a second authentication message using the third key;  
6              transmit a second request message to have datagrams  
7       destined for a first address of a mobile device associated  
8       with the home network to a third address not associated with  
9       the home network, wherein the second authentication message is  
10      included in the second request message.

1       33. A computer program product residing on a computer  
2       readable medium having instructions stored thereon that, when  
3       executed by the processor, cause that processor to:

4 extract an authentication message from a message  
5 requesting that datagrams destined for a first Internet  
6 Protocol address of a mobile device be routed to a second  
7 Internet Protocol address, wherein the authentication message  
8 comprises:

9 authentication data encrypted with a first key; and  
10 a data structure comprising the first key, and  
11 encrypted with a second key;  
12 verify the authentication data; and  
13 if the authentication data is valid, then generating a  
14 third key.

1 34. The computer program product of claim 33 further  
2 comprising instructions that cause the processor to:  
3 form a reply message that includes the third key; and  
4 transmit the reply message to a device associated with  
5 the request message.

1 35. The computer program product of claim 33 further  
2 comprising instructions that cause the processor to:  
3 store the encryption key.

1 36. The computer program product of claim 33 wherein the  
2 message comprises a Registration Request message.

1       37. A system comprising:

2              a first network device associated with a first network;

3       and

4              a second network device associated with the first

5       network, the second network device capable of:

6              producing an authentication message including a data

7       structure comprising the first key with the data structure

8       encrypted with a second key;

9              generating a request message to have the first network

10       device deliver datagrams destined for a home address

11       associated with the second device on the first network to a

12       second address on a second, different network; and

13              including the authentication message within the request

14       message.

1       38. The system of claim 37 wherein the second network device

2       is further capable of forming a second authentication message

3       by computing a hash of the request message using the first

4       key.

1       39. The system of claim 38 wherein the first network device

2       is capable of receiving the request message and generating a

3       key if the second authentication message is valid.

1       40. The system of claim 37 wherein the first network device  
2       is a router.

1       41. The system of claim 37 wherein the second network device  
2       is a laptop computer.

1       42. The system of claim 37 further comprising:  
2              a third device capable of producing the first key and the  
3       data structure encrypted with the second key.

1       43. A system comprising:  
2              a router associated with a first network and comprising  
3       an input port for receiving datagrams and a switch fabric for  
4       determining destination of datagrams; and  
5              a processor capable of:  
6                  reading request message to reroute datagrams  
7       destined for a first address of a mobile device associated  
8       with the first network to a second address associated with a  
9       second, different network, wherein the request message  
10      includes a data structure comprising a first key unknown to  
11      the processor encrypted with a second key that is known to the  
12      processor,  
13              verifying an authentication message associated with  
14      the request message wherein the authentication message

15 comprises a hashed version of the request message computed  
16 using the first key; and  
17 if the authentication message is valid, then generating a  
18 third key.

1 44. The system of claim 43, wherein the processor is further  
2 capable of:  
3 encrypting the third key.

1 45. The system of claim 44, wherein the processor is further  
2 capable of:  
3 forming a reply message, wherein the reply message  
4 includes the encrypted third key; and  
5 forming a reply authentication message.

1 46 The method of claim 45 wherein the reply authentication  
2 message comprises a hashed version of the reply message.

1 47. The method of claim 45 further comprising: transmitting  
2 the reply message and the reply authentication message to the  
3 mobile device at the second address.